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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/688,994

10/21/2003

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4255-5

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7590

03/26/2008

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EXAMINER

TRINH, THANH TRUC

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/26/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/688,994	<b>Applicant(s)</b> YOSHIDA ET AL.	
	<b>Examiner</b> THANH-TRUC TRINH	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/9/2007</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3-6, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Stein et al. (US Patent 5071491).

Regarding claim 1, as seen in Figures 1 and 7, Stein et al. discloses a solar cell module edge face sealing member (comprising seal 26 and insulator 27) for sealing one or more gaps between at least one of the solar cell module body (glass-plastic composite solar cell equipment 25) and at least one of the frame body (metallic frame 24), wherein the solar cell module body (25) is captured within frame body (24). Stein et al. describes that the seal coats the entire edge of solar cell module body (See col. 4 lines 5-7) and the insulation 27 functions as to insulate the upper and lower part of the electrical conductive frame 24 (See col. 4 lines 12-24). As seen in Figure 7, the upper and lower seals 26 and insulation (27) are either attached to each other directly or via the frame (24). Therefore, it is the Examiner's position that the edge face sealing having

an integral structure (attaching to each other to form a whole) and being formed in frame-like shape (See Figure 7) and in substantially parallel fashion with respect to one or more outer shapes of the solar cell module body. The edge face sealing member (combination of seal 26 and insulator 27) is substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 7). The edge face sealing member comprises upper sealing regions (upper seal 26 in Figure 7) abutting front surface of the solar cell module body (25), lower sealing regions (lower seal 26) abutting back surface of the solar cell module body (25), side sealing regions (insulation 27) abutting the edge face of the solar cell module body (25). (See Figure 7). The upper sealing region and the lower sealing region are disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (combination of the seal 26 and the insulation 27) captures the solar cell module body (25) along substantially an entire edge portion perimeter, and is captured within the frame body (24). As seen in Figure 7, Stein also teaches the edge face sealing member (combination of seal 26 and insulation 27) has ribs and being pressed against the surfaces of the solar cell module body (25) to make contact (See col. 3 line 65 to col. 4 line 24). Therefore it is the Examiner's position that the upper sealing region (or upper seal 26), the lower sealing region (or lower seal 26) and the side sealing region make a tight contact with the solar cell module body or bodies; and the edge face sealing member having an integral structure, because the seal 26 and insulation 27 are connected to each other either directly or via the frame 24, is captured within the frame body 24). Stein also teaches the edge face sealing member (combination of seal 26 and

insulation 27) further comprises tip portions of the upper sealing region and the lower sealing region forming in a bent fashion toward a groove recess, wherein the distance between the tip portions is substantially the same or less than a thickness of the edge portion of the solar cell module body. (See Figure 7).

Regarding claim 3, Stein et al. discloses the lower sealing region (lower seal 26) is longer than the upper sealing region (upper seal 26). (See Figure 7)

Regarding claim 4, Stein et al. describes the surface of the upper sealing region and the surface of the lower sealing region face each other, and one or more projections are formed on each surface. (See Figure 7).

Regarding claim 5, Stein et al. describes the projections comprise single-rib (upper seal) and multiple-rib (lower seal 26) formed in parallel fashion. (See Figure 7).

Regarding claim 6, Stein et al. describes the tip portions of the upper and lower sealing region disposed in inclined fashion. (See Figure 7).

Regarding claim 14, as seen in Figure 7, Stein et al. discloses a solar cell module comprising a solar cell module body (25) captured within a frame body (metallic frame 24), wherein an edge face sealing member (combination of seal 26 and insulation 27), frame-like in structure, are formed in substantially parallel fashion with respect to one or more outer shape of the solar cell module body. The edge face sealing member is substantially C-shaped or U-shaped in cross section. As seen in Figure 7, the upper and lower seals 26 and insulation (27) are either attached to each other directly or via the frame (24). Therefore it is the Examiner's position that the edge face sealing member

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(or combination of seal 26 and insulation 27) has an integral structure. The edge face sealing member (combination of seal 26 and insulation 27) comprises an upper sealing region (upper seal 26) abutting the front surface of the solar cell module body (25), an lower sealing region (lower seal 26) abutting the back surface of the solar cell module body, a side sealing region (insulation 27) abutting the edge face of the solar cell module body. The upper sealing region (upper seal 26) and the lower sealing region (lower seal 26) are disposed so as to open to the outside at either side from edge portions of the side sealing region (See Figure 7). The edge face sealing region member (combination of the seal 26 and the insulation 27) captures the solar cell module body (25) along substantial an entire edge portion perimeter, and is captured within the frame body (See Figure 7 and col. 3 line 65 to col. 4 line 24). As seen Figure 7, Stein et al. also describes the edge face sealing member (combination of seal 26 and insulation 27) has ribs being pressed against the surfaces of the solar cell module body to make contact (See col. 3 line 65 to col. 4 line 24). Therefore, it is the Examiner's position Stein teaches the upper sealing region (upper seal 26), the lower sealing region (lower seal 6) and the side sealing region (insulation 27) make a tight contact with the solar cell module body (25) when the edge face sealing member is captured within at least one of the frame body (24). The edge face sealing member (combination of seal 26 and insulation 27) further comprises tip portions of the upper sealing region and the lower sealing region forming in a bent fashion toward a groove recess (gap between the upper and lower seal 26), wherein the distance between the

tip portions is substantially the same or less than a thickness of the edge portion of the solar cell module body. (See Figure 7 and col. 4 lines 5-24).

Regarding claim 18, Stein et al. disclose projections extending inwardly from an interior surface of each of the sealing regions, wherein the tip portions extend further inwardly than the projections. (See Figure 7).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 7-8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115).

Stein et al. disclose a solar cell module edge face sealing member or solar cell module as described in claims 1 and 14, wherein the solar cell module body (or glass-

plastic composite solar cell equipment 25) comprises glass pane, solar cell, and plastic (See Figure 5 and col. 3 lines 50-65).

Regarding claim 8, Stein et al. also teach the seal 26 can be made of rubber (See col. 4 line 16). It is the Examiner's position that rubber is elastomer resin.

Stein et al. do not teach using EVA (ethylene vinyl acetate) for light-receiving-surface and back-surface sealing resin layers.

Regarding claims 7 and 15, Kataoka et al. teach using EVA for light-receiving-surface and back-surface sealing resin layers (502 and 504). (See Figure 5 and col. 10 lines 48-67 and col. 14 lines 15-57)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module body of Stein et al. by using EVA for light-receiving-surface and back-surface sealing layers as taught by Kataoka et al., because it would provide an excellent protection, adhesion, durability. (See col. 10 lines 48-67 and col. 14 lines 15-57).

2. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115) and further in view of Kirchmann et al. (US Patent 6073936) .

Stein et al. and Kataoka et al. teach a solar module edge face sealing member as described in claim 8.



Neither Stein et al. nor Kataoka et al. teach using polypropylene resin such as PP-EPDM or polystyrenic resin such as polystyrene-isoprene for sealing member.

Kirchmann et al. et al teach using SIS (a polystyrene-isoprene blend) and EPDM/PP (a polypropenic resin). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Stein et al. and Kataoka et al. by using SIS or PP-EDPM for edge face sealing member as taught by Kirchmann et al., because it would provide a sealing with flexibility or elastic characteristic. (See '936 col. 3 lines 3-5 and col. 4 lines 4-16).

3. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Kataoka et al. (US Patent 6320115) and Kirchmann et al. (US Patent 6073936) as applied to claim 9, and further in view of Kotani et al. (US Patent 5414030).

Stein et al., Kataoka et al. and Kirchmann et al. teach a solar cell module edge face sealing as described in claim 9.

Neither Stein et al., Kataoka et al. nor Kirchmann et al. teach using additive such as magnesium silicate or ultraviolet-resistant agents.

Regarding claim 11-12, Kotani et al. teach using magnesium silicate to an elastomer resin. (See col. 14 lines 39-68).

Regarding claim 13, Kotani et al. teach using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Stein et al., Kataoka et al. and Kirchmann et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because it would improve weather resistance. (See col. 13 lines 22-31)

4. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Hatsukaiwa et al (PGPub 20030034064).

Stein et al. disclose a solar cell module edge face sealing member as described in claim 1, wherein the edge portions of the edge face sealing member have angularly grooves. (See '491 Figure 7)

Stein et al. do not specifically teach the edge portions of the side sealing region are curved, nor do they teach the edge portions of the side sealing region have chamfered surfaces.

Regarding claim 16, Hatsukaiwa et al. teach the edge portions of the side sealing region of a solar cell module edge face sealing member (64a) are curved. (See '064 Figure 22)

Regarding claim 17, Hatsukaiwa et al. teach the edge portions of the side sealing region of a solar cell module edge face sealing member (64a) have chamfered surfaces. (See '064 Figure 22).

It would have been obvious to one ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Stein et al. by having the edge portions of the side sealing curved or chamfered as taught by Hatsukaiwa et al., because a curved or chamfered surface of the edge portion of the edge sealing member is a matter of design choice.

5. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stein et al. (US Patent 5071491) in view of Hatsukaiwa et al (PGPub 20030034064).

Stein et al. disclose a solar cell module edge face sealing member comprising a solar cell module body (25) adapted to be provided in a frame body (metallic frame 24), an edge face sealing member (seal 26 and insulation 27) located between the frame body (24) and the solar cell module body (25) to seal the gap between the frame body and the solar cell module body. The edge face sealing member (26 and 27) is frame-like in shape, formed in a substantially parallel fashion with respect to one or more outer shape of the solar cell module body (25), encapsulating the solar cell module body along substantially the entire edge portion perimeter of the solar cell module. As seen in Figure 7, the insulation (27), upper and lower seal 26 are connected to each other either directly or via the frame 24, therefore it is the Examiner's position that the edge sealing member (combination of insulation and seal 26) has an integral structure (different parts

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are joined to form a whole). The edge face sealing member is substantially U-shaped. Each of the sidewalls of the edge face sealing member includes a distal end tip portion that is angled inwardly toward the solar cell module body relative to a main body of the sidewall. (See Figure 7). Stein et al teaches that the upper and lower seals 26 have ribs and being pressed against the surfaces of the solar cell module body (25) to make contact. (See Figure 7, col. 3 line 65 to col. 4 line 24). Therefore it is the Examiner's position that Stein teaches an upper sealing region (upper seal 26), a lower sealing region (lower seal 26) and side sealing region (insulation 27) make tight contact with the solar cell module body when the edge face sealing member having an integral is captured within the frame body.

Stein et al. do not specifically teach the first and second sidewalls connected to each other via a bottom wall.

Hatsukaiwa et al. teach the sidewalls of an edge face sealing member (64a) connected to each other via a bottom wall. (See Figure 22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing of Stein et al. by having the sidewalls connected via the bottom wall as taught by Hatsukaiwa et al., because it would provide a proper fixing means and a protection from environmental elements. (See paragraphs [0095] and [0104])

6. Claims 1, 3-6, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064)

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

As seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module edge face sealing member (4) for sealing one or more gaps between at least one of the solar cell module body (8) and at least one of the frame body (51), wherein the solar cell module body (8) is captured within frame body (51). The edge face sealing member having an integral structure and being formed in frame-like shape and substantially parallel fashion with respect to one or more outer shapes of the solar cell module body (See Figures 1 and 4B). The edge face sealing member is substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 4B). The edge face sealing member (4) comprises upper sealing regions abutting front surface (exposed surface of front cover 1) of the solar cell module body (8), lower sealing regions abutting back surface (exposed surface of back cover 3) of the solar cell module body (8), side

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sealing regions abutting the edge face of the solar cell module body (8), wherein the surface of the upper sealing region and the surface of the lower sealing region face each other. (See Figure 4B). The upper sealing region and the lower sealing region are disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (4) having an integral structure capturing the solar cell module body (8) along substantially the entire edge portion perimeter, and being captured within the frame body (51). (See Figures 1 and 4B). Yoda et al. also teach the distance between the tip portions is substantially the same as the thickness of the edge portion of the solar cell body. (See Figure 4B).

With respect to claim 3, Yoda et al. teach one of the lower sealing region is longer than one of the upper sealing region. (See Figure 4B)

Yoda et al. do not teach the tip portions of the upper sealing regions and lower sealing region formed in a bent fashion toward a groove recess, nor do they teach forming projection on each of the facing surfaces of the lower and upper sealing regions.

With respect to claims 1 and 6, Meadows teaches an edge face sealing member (11) having the tip portions (22 and 23) of the upper and lower sealing regions formed in a bent fashion toward a groove recess. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the tip portions of the upper and lower sealing regions formed in a bent or inclined fashion toward a groove recess. (See '064 Figure 22).

With respect to claim 4, Meadows teaches an edge face sealing member (11) having projections (24 and 25) formed on each facing surfaces of the upper and lower regions. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having projections formed on each facing surfaces of the upper and lower regions. (See '064 Figure 22).

With respect to claim 5, Meadows teaches an edge face sealing member (11) having projections with multiple-rib regions (3 ribs on each surface of the upper and lower sealing regions) formed in parallel fashion. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64) having projection with single-rib regions (1 rib on each surface of the upper and lower sealing regions). (See '064 Figure 22)

With respect to claim 16, Meadows teaches an edge face sealing member (11) having the edge portions of the side sealing region are curved. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the edge portions of the side sealing region are curved. (See '064 Figure 22).

With respect to claim 17, Meadows teaches an edge face sealing member (11) with the edge portions of the side sealing regions having chamfered surfaces. (See '080 Figures 2-3). Meadows teaches an edge face sealing member (gasket 64a) with the edge portions of the side sealing regions having chamfered surfaces. (See '064 Figures 22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Yoda et al. by substituting with the edge face sealing members as taught by Meadows or Hatsukaiwa et al. because it would provide a waterproof seal which prevent entrance of air, water or other fluids (See '080 col. 3 lines 35-39 or '064 paragraphs [0104] and [0141]). In such combination, the upper sealing region, the lower sealing region and the side sealing region must make a tight contact with the solar cell module body, since the edge face sealing has to hold tight to the solar cell module body in order to seal it from weather element. Since Yoda and Meadows or Hatsukaiwa are all concerned about holding a flat panel in place, sealing and protecting a flat panel, one would have a reasonable expectation of success in the combination.

7. Claim 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064), and further in view of Kataoka et al. (US Patent 6320115).

Regarding claims 7-9, Yoda et al. in combination with either Meadows et al. or Hatsukaiwa et al. teach a solar cell module edge face sealing member as described in claim 1. Yoda et al. also teach the solar cell module body is laminated in order: front cover 1, filler 6a, solar cells 2, filler 6b and weather resistant back-surface (or back cover 3. (See '718 Figure 1 and col. 4 lines 48-67 bridging col. 5 lines 1-11). Yoda et al. further teach the edge face sealing member is made of elastomer resin such as EPDM



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(ethylene propylene diene monomer rubber), or a polypropylenic rubber. (See '718 col. 5 lines 1-11).

Yoda et al. do not specifically teach the front cover 1 is a glass surface, nor do they teach the fillers (6a and 6b) are made of EVA.

Kataoka et al. teach using glass as a front cover 503 (See col. 13 lines 18-35), and EVA filled between the cover and solar cells. (See Figure 5 and col. 10 lines 46-67, col. 14 lines 15-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell module body of Yoda et al. and by using glass as a front cover and filling EVA between solar cells and covers as taught by Kataoka et al., because it would give an excellent cover layer with weatherability, water repellency, heat resistance and excellent filler for protection, adhesion and durability. (See col. 10 lines 48-67, col. 13 lines 18-35 and col. 14 lines 15-57).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064) and Kataoka et al. (US Patent 6320115) as applied to claim 9, and further in view of Kirchmann et al. (US Patent 6073936).

Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. teach a solar cell module edge face sealing as described in claim 9. Neither of them teach the edge face sealing member made of PP-EPDM copolymer or polystyrene-isoprene.

Kirchmann et al. teach the using SIS (a polystyrene-isoprene blend) and EPDM/PP (a polypropylenic copolymer). (See col. 4 lines 4-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. by using polystyrene-isoprene blend or EPDM/PP for the edge face sealing member, because it would provide a seal with flexibility or having an elastic characteristic. (See '936 col. 3 lines 3-5 and col. 4 lines 4-16).

9. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064) and Kataoka et al. (US Patent 6320115) as applied to claim 9, and further in view of Kotani et al. (US Patent 5414030).

Yoda et al., Meadows (or Hatsukaiwa et al.) and Kataoka et al. teach a solar cell module edge face sealing as described in claim 9.

Neither Yoda et al., Meadows, Hatsukaiwa et al. nor Kataoka et al. teach using additive such as magnesium silicate or ultraviolet-resistant agents.

Regarding claim 11-12, Kotani et al. teach using magnesium silicate to an elastomer resin. (See col. 14 lines 39-68).

Regarding claim 13, Kotani et al. teach using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Yoda et al., Meadows (or Hatsuikaiwa et al.) and Kataoka et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because it would improve weather resistance. (See col. 13 lines 22-31)

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064)

As seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module comprising an edge face sealing member (4), a solar cell module body (8) captured within the frame body (51). The edge face sealing member has an integral structure and is frame-like in shape, and substantially C-shaped in cross section or substantially U-shaped in cross section (See Figure 4B). The edge face sealing member (4) comprises upper sealing regions abutting front surface (exposed surface of front cover 1) of the solar cell module body (8), lower sealing regions abutting back surface (exposed surface of back cover 3) of the solar cell module body (8), side sealing regions abutting the edge face of the solar cell module body (8), wherein the upper sealing region and the lower sealing region are disposed so as to open to the outside therefrom at either side from the edge portions of the side sealing region. The edge face sealing member (4) has an integral structure, captures the solar cell module body (8) along substantially the entire edge portion perimeter, and also is captured within the frame body (51). (See

Figures 1 and 4B). Yoda et al. also teach the distance between the tip portions is substantially the same as the thickness of the edge portion of the solar cell body. (See Figure 4B).

Yoda et al. do not teach the tip portions of the upper sealing regions and lower sealing region formed in a bent fashion toward a groove recess.

With respect to claims 1 and 6, Meadows teaches an edge face sealing member (11) having the tip portions (22 and 23) of the upper and lower sealing regions formed in a bent fashion toward a groove recess. (See '080 Figures 2-3). Hatsukaiwa et al. also teach an edge face sealing member (gasket 64a) having the tip portions of the upper and lower sealing regions formed in a bent or inclined fashion toward a groove recess. (See '064 Figure 22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Yoda et al. by substituting with the edge face sealing members as taught by Meadows or Hatsukaiwa et al. because it would provide a waterproof seal which prevent entrance of air, water or other fluids (See '080 col. 3 lines 35-39 or '064 paragraphs [0104] and [0141]). In such combination, the upper sealing region, the lower sealing region and the side sealing region must make a tight contact with the solar cell module body, since the edge face sealing has to hold tight to the solar cell module body in order to seal it from weather element. Since Yoda and Meadows or Hatsukaiwa are all concerned about holding a flat panel in place, sealing and protecting a flat panel, one would have a reasonable expectation of success in the combination.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064), and further in view of Kataoka et al. (US Patent 6320115).

Regarding claim 15, Yoda et al. in combination with either Meadows et al. or Hatsukaiwa et al. teach a solar cell module edge face sealing member as described in claim 1. Yoda et al. also teach the solar cell module body is laminated in order: front cover 1, filler 6a, solar cells 2, filler 6b and weather resistant back-surface (or back cover 3. (See '718 Figure 1 and col. 4 lines 48-67 bridging col. 5 lines 1-11).

Yoda et al. do not specifically teach the front cover 1 is a glass surface, nor do they teach the fillers (6a and 6b) are made of EVA.

Kataoka et al. teach using glass as a front cover 503 (See col. 13 lines 18-35), and EVA filled between the cover and solar cells. (See Figure 5 and col. 10 lines 46-67, col. 14 lines 15-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the solar cell module body of Yoda et al. and by using glass as a front cover and filling EVA between solar cells and covers as taught by Kataoka et al., because it would give an excellent cover layer with weatherability, water repellency, heat resistance and excellent filler for protection, adhesion and durability. (See col. 10 lines 48-67, col. 13 lines 18-35 and col. 14 lines 15-57).

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080) or Hatsukaiwa et al. (PGPub 20030034064), and further in view of Stein et al. (US Patent 5071491).

Regarding claim 18, Yoda et al. and Meadows or Hatsukaiwa et al. teach a solar cell module as described in claim 1. Both Meadows and Hatsukaiwa et al. teach the edge face sealing member further comprises projections extending inwardly. (See '080 Figures 2-3 and '064 Figure 22).

Neither Yoda et al., Meadows nor Hatsukaiwa et al. specifically teach the tip portions extend further inwardly than the projections.

Stein et al. teach an edge face sealing member (comprising seal 26 and insulation 27) having tip portions extend further inwardly than the projection. (See top seal 26 in Figure 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the sealing of Meadows (or Hatsukaiwa et al.) by having the tip portions extend inwardly further than the projections as taught by Stein et al., because it would provide a frame that can serve as edge protection, increasing mechanical stability, protection against moisture and provide local fastening of solar cell equipment. (See col. 1 lines 9-15)

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoda et al. (US Patent 6528718) in view of either Meadows (US Patent 3455080).

Regarding claim 19, as seen in Figures 1 and 4A-B, Yoda et al. disclose a solar cell module edge face sealing member structure comprising a solar cell module body (8) adapted to be located partially between the frame (51), an edge face sealing member (4) adapted to be located between the frame body and the solar cell module body for sealing gaps between the frame body and the solar cell module body. The edge face sealing member has an integral structure, being formed in frame-like shape and substantially parallel fashion with respect to the outer shapes of the solar cell module body and encapsulates the solar cell module body along substantially the entire edge portion perimeter of the solar cell module body (See Figure 1). The edge face sealing member is substantially U-shaped and has first and second sidewalls connected to each other via a bottom wall. The edge face sealing member has an upper sealing region, a lower sealing region and a side sealing region make a tight contact with the solar cell module body when the edge face sealing member having an integral structure is captured within the frame body. (See Figure 4B).

Yoda et al. do not teach each of the side wall includes a distal end tip portion that is angled relative to a main body of the sidewall so that the tip portions angle inwardly toward and contact the solar cell module body.

Meadows teaches an edge face sealing member having each sidewall includes a distal end tip portion that is angled relative to a main body of the sidewall so that the tip portions angle inwardly toward and contact glass pane.<sup>27</sup> (See Figures 2 and 3 of Meadows)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Yoda et al. by using the edge face sealing member as taught by Meadows because it would provide a seal which prevent entrance of air, water or other fluids. (See col. 3 lines 35-39 of Meadows). In such combination, the upper sealing region, the lower sealing region and the side sealing region must make a tight contact with the solar cell module body, since the edge face sealing has to hold tight to the solar cell module body in order to seal it from weather element. Since both Yoda and Meadows are concerned about holding a flat panel in place, sealing and protecting the flat panel, one would have a reasonable expectation of success in the combination.

### ***Response to Arguments***

Applicant's arguments filed 12/14/2007 have been fully considered but they are not persuasive.

#### **Stein Rejection**

Applicant argues that Stein does not teach "the upper sealing region, the lower sealing region and the side sealing region are formed integrally." However this argument is not deemed to be persuasive. As seen in Figure 7, Stein teaches the upper sealing region (or upper seal 26), the lower sealing region (or lower seal 26) and the side sealing region (or insulation 27) are attached to each other either directly or via the metallic frame 24. Therefore it is the Examiner's position that the upper sealing region, the lower sealing region and the side sealing region are formed integrally because



different portions are connected to form a whole. Applicant also argues "Stein fails to disclose the feature of claim 1 that 'wherein tip portions of the upper sealing region and the lower sealing region are formed in a bent fashion so as to be inclined toward a groove recess, and wherein a distance between said tip portions is substantially the same as or is somewhat less than a thickness of the edge portion of the solar cell module body or bodies.'" without providing any explanation, therefore the argument is not persuasive. As seen in Figure 7, Stein clearly discloses tip portions of the upper sealing region and the lower sealing region (or the outermost ribs of the upper and lower seals 26) are formed in a bent fashion as to be inclined a groove recess (or the gap between the seals for receiving the solar cell 25), and wherein a distance between the tip portions (or the outermost ribs of upper and lower seals 26) is substantially the same as a thickness of the edge portion of the solar cell module body when capturing the solar cell module body, and substantially less than a thickness of the edge portion of the solar cell module when not capturing the solar cell module because the tip portions are long and bent further as the solar cell inserted in the groove recess (or the gap between the tip portions).

*Yoda in view of Meadows Rejection*

Applicant argues "[t]he window sash edge face sealing by Meadows, which is not fitted into a frame, is not applicable to the solar cell module body edge face sealing of the present invention. Moreover, even if the window sash edge face sealing by Meadows may be applied to the solar cell module body edge face sealing of the present

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invention, the resulting product cannot achieve the effects and operations as expected by the present invention. Meadows window sash is entirely unrelated to the invention invention." However this argument is not deemed to be persuasive. First of all, there are no specific dimensions disclosed in both references to invalidate the fact that edge face sealing of Meadows can fit in the frame of Yoda. Meadows teaches a plastic panel-support structure having flexible plastic sealing member for resiliently retaining the pane of glass within the frame member and providing a seal which prevents entrance of air, water or other fluids (See Figures 1-2, col. 1 lines 43-49; col. 3 lines 35-39). Yoda teaches a solar battery panel having a sealing member (4) captured by the frame (51). It would have been obvious to one skilled in the art to use the sealing of Meadows in place of the sealing of Yoda because it would provide a seal which prevent entrance of air, water or other fluids (See col. 3 lines 35-39 of Meadows. Both Yoda and Meadows are concerned with sealing the panel (either solar panel or window panel), one would have a reasonable expectation of success from the combination.

Applicant also argues "[t]he Office Action appears to indicate that the edge face sealing members of the cited references are simply intended for protection against the weather elements (specially, for outdoor installation). Thus, the Office Action appears to contend that the edge face sealing members of the cited references are applicable to the present invention. However, claim 1 requires that 'the upper sealing region and the lower sealing region being disposed so as to open to the outside'. This requirement may ensure secure sealing of the gap between the edge face sealing member and the solar cell module body when the edge face sealing member seals the gap between the solar

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cell module body and the frame body. In contrast, the window sash edge face sealing by Meadows, which is not intended to be captured into a frame body, cannot securely seal a gap between the edge face sealing member and the solar cell module body. Furthermore, even if the window sash edge sealing by Meadows is applied, the resulting structure cannot achieve the effects and operations as expected by certain example embodiments of the present invention." The Examiner maintains the position that "the upper sealing region and the lower sealing region being disposed so as to open to the outside", i.e., the tip of the sealing region is opened to the outside. The gap between the solar cell module body and the frame body is occupied by the sealing edge face sealing member, therefore the edge face sealing member seals the gap between the solar cell module body and the frame body. Meadows teaches a plastic panel-support structure having flexible plastic sealing member with protrusions for resiliently retaining the pane of glass within the frame member and providing a seal which prevents entrance of air, water or other fluids (See Figures 1-2, col. 1 lines 43-49; col. 3 lines 35-39). Yoda teaches a solar battery panel having a sealing member (4) captured by the frame (51). It would have been obvious to one skilled in the art to use the sealing of Meadows in place of the sealing of Yoda because it would provide a seal which prevent entrance of air, water or other fluids (See col. 3 lines 35-39 of Meadows. Both Yoda and Meadows are concerned with sealing the panel (either solar panel or window panel), one would have a reasonable expectation of success from the combination.

Yoda in view of Hatsukaiwa Rejection

Applicant argues that Hatsukaiwa fails to disclose or suggest "the upper sealing region, the lower sealing region and the side sealing region make a tight contact with the solar cell module body or bodies when the edge face sealing member having an integral structure is captured within at least one of the frame body or bodies." Applicant further argues "[a] careful analysis of Fig. 22 of Hatsukaiwa reveals that the edge face sealing member and the solar cell module body make a point contact without making a tight contact with each other." However, this argument is not deemed to be persuasive. First of all, there is no specific definition of "tight contact" in the originally filed disclosure. Secondly, as seen in Figure 22, Hatsukaiwa discloses a sealing member (or gasket 64a) functioning as waterproof gasket (See paragraph 0141), therefore the sealing member (or gasket 64a) must contact the solar cell module body tightly in order to seal the water away. Thus, it is the Examiner's position that edge face sealing member (or gasket 64a) makes a tight contact with the solar cell module body.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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/Nam X Nguyen/

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